FACILITY POST-EXAMINATION COMMENTS

FOR THE LASALLE INITIAL EXAMINATION - NOVEMBER 2006

Exelon Nuclear

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RA06-094

November 30, 2006

U. S. Nuclear Regulatory Commission
Attention: NRC Region III Administrator
2443 Warrenville Rd.
Suite 210
Lisle, IL 60532-4352

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Subject: Comments on NRC Administrated Initial License Written Examination

In accordance with NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Exelon Generation Company, LLC, submits comments for your review on the written examination administrated during the week of November 20th, 2006.

As instructed by NUREG-1021, ES-501, "Initial Post-examination Activities," the comments are enclosed. Should you have any questions concerning this letter, please contact Mr. Terrence Simpkin, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,

Daniel J. Enright

Daniel J. Enright
Station Manager
LaSalle County Station

Enclosures

cc: Chief, NRC Operator Licensing Branch (with enclosures)
Senior Resident Inspector - LaSalle County Station (w/o enclosures)

NOV 30 2006

LaSalle County Station Initial License Nuclear Regulatory Commission Exam Comments

Examination Question #1

Given the following plant conditions:

- 1B Reactor Recirculation pump tripped.
- Power and flow are in the allowable region of Technical Specifications.

Thermal Limits:

(1) Average Planer Linear Heat Generations Rate
(2) Minimum Critical Power Ratio
(3) Linear Heat Generation Rate
(4) Maximum Allowable Power Ratio

Which combination of thermal limits must be adjusted?

a. 1 and 2 only.
b. 1, 2, and 3 only.
c. 1, 2, and 4 only.
d. 3 and 4 only.

Examinee's Comment:

For question #1, APLHGR and MCPR are the only Thermal limits that are required to be adjusted per the T.S. Bases for 3.2.1, 3.2.2, and 3.2.3.

Per 3.2.1, for SLO (Single Loop Operations), a conservative multiplier is applied to the exposure dependent APLHGR limits for two loop operations. (Page B 3.2.1-1). MCPR obviously does get adjusted for SLO based on Safety limit MCPR.

Bases 3.2.3 does NOT state that a SLO multiplier is applied to LHGR for Single Loop Operations. Based on the statement in the Background section of B.3.2.3, Limits on the LHGR are specified to ensure that the fuel design limits are not exceeded anywhere in the core during normal operation, including anticipated operational occurrences, and Per LaSalle UFSAR section 15.3, Decrease in Reactor Coolant System Flow Rate, section 15.3.1 describes a single Recirculation Pump Trip. Hence a single Recirculation Pump Trip is an Anticipated Operational Occurrence and no LHGR multiplier is required.

Therefore, the only correct answer is MCPR and APLHGR. Items #1 and 2 (Answer "A").

References:

Tech Spec 3.2.1, 3.2.2, and 3.2.3 bases
LOA-RR-101 REACTOR RECIRCULATION SYSTEM ABNORMAL
Core Operating Limits Report (COLR)

LaSalle Management Response:

A review of the Tech Spec bases for the individual thermal limits indicates that in all cases, APLHGR and MCPR must be adjusted for single loop operations. Per the Tech Spec bases, LHGR should be valid for all anticipated operational occurrences. LOA-RR-101 REACTOR RECIRCULATION SYSTEM ABNORMAL says that LHGR has to be adjusted only if required by the COLR. The students did not have the COLR available for the written examination and should not be required to have the COLR memorized along with all the particulars of the current core load. A detailed review of the COLR indicates that LHGR is only required to be adjusted for single loop operation if GE-14 fuel is installed. A LaSalle Station Qualified Nuclear Engineer has reviewed this question, reviewed the COLR and agrees with this position. Depending on whether GE-14 fuel is installed or not, either answer "A" or "B" could be correct. The question does not indicate if GE-14 fuel is installed. Not enough information is available to differentiate between answer "A" or "B" .

Recommended Disposition:

Recommend accepting both "A" and "B" as correct.

Examination Question #15

Unit 1 had been operating at 100% RTP for 237 days when a Group 1 Isolation occurred. After responding to the event, operators found the following plant conditions:

- RPV pressure is being maintained 800 to 1000 psig using RCIC and SRVs.
- RPV water level is being maintained between 11 in. and 59.5 in. with RCIC.
- RCIC is taking a suction from the Suppression Pool.
- Both loops of RHR are in Suppression Pool Cooling.
- Suppression Pool Temperature is 110 F and increasing slowly.
- Suppression Pool Level is –5 ft and decreasing slowly.

Which of the following will occur first as Suppression Pool Level drops?

a. Damage to the RHR pumps due to inadequate Net Positive Suction Head.
b. Damage to the RCIC pump due to air entrainment in the pump suction.
c. Damage to the RCIC pump due to inadequate Net Positive Suction Head.
d. Pressurization of the suppression chamber due to inadequate condensation of steam by the Suppression Pool.

Examinee's Comment:

This question does not provide rates for Suppression Level decreasing or Suppression Pool Temperature increasing. Answer "C" would only be correct if temperature reached 195F (with Pool Level at <-7ft). With 2 loops of suppression pool cooling in operation, suppression pool temperature would not be expected to exceed 197F with pressure being maintained at 800-1000 psig with RI and SRVs. Choice "B" would occur at -11.4 ft, regardless of suppression pool temperature.

References:

LGA-001 RPV Control
LGA-003 Primary Containment Control

LaSalle Management response:

Answer "C" is correct per the LGA-003 step that states that below -10.4 feet RCIC may not have adequate NPSH. Below –10 feet, the RCIC NPSH curve no longer applies.

Recommended Dispostion:

Recommend no change to answer key for question #15.

Examination Question #40:

Given the following:

- RPV Blowdown has been initiated due to exceeding the Pressure Suppression Pressure curve.
- Drywell Pneumatic Bottle Bank header pressures both read approximately 130 psig.

Of the answers given below, which is the highest drywell pressure that will allow the ADS valves to open and remain open?

a. 40
b. 50
c. 60
d. 70

Examinee's Comment:

The question indicates that the RPV has been blowndown due to exceeding the PSP curve. In addition, both ADS bottle banks are at 130 psig. The question does not state what pressure exists in the IN receiver or ADS accumulators. The question implies that because the bottle banks are at 130 psig, the IN system and ADS accumulator pressure has decreased to 130 psig. Although this is a plausible scenario making choice "A" correct, it is also plausible that the IN system and ADS accumulators are still pressurized and that the ADS bottle banks are low. It must be noted that there is a pressure regulator between the bottle banks and the unregulated IN header that opens at 160 psig. Design assumptions (LPGP-CALC-01) states that a minimum differential pressure of 88 PSIG is required to open the ADS valves. It is assumed that the IN system is pressurized to 151 psig (low pressure alarm for the ADS accumulators per LPGP-CALC-01). If the system is pressurized to at least 151 PSIG coupled with 88 psid needed to open the ADS valves, the ADS valves would function up to 63 PSIG in the containment making answer "C" also correct.

References:

LPGP-CALC-01 EOP & SAMG CALCULATION CONTROL -- INSTRUCTIONS AND INPUT DATA

LaSalle Management response:

The students technical position is correct. Based on conditions listed in the question, the student has to determine the effect on pressure in the ADS accumulators. The question indicates that pressure in the ADS bottle banks are both at 130 psig. For pressure to be that low during the transient, there would have to be a leak in the instrument nitrogen system. Each ADS valve has an ADS accumulator separated from the header by a check valve. If pressure is lost in the ADS bottle banks, pressure can still remain in the ADS accumulators. The bases for the primary containment pressue limit assumes ADS accumulator pressure is at least as high as the ADS accumulator low pressure alarm setpoint. The question does not give information regarding the status of the ADS accumulators. There is not enough information to differentiate between answers "A" and "C".

Recommended Dispostion:

Recommend accepting both "A" and "C" as correct.

Examination Question #76

The Main Turbine is coasting down following a trip from full power. As speed reduces below 1400 rpm, the unit assist Reactor Operator reports that turbine vibration has increased above 10 mils. You should direct the unit assist Reactor Operator to . . .

a. continue to monitor vibration, as high vibrations are normal as the turbine coasts down and vibration levels should decrease as speed approaches 800 rpm.
b. lower Main Turbine Lube Oil temperature, to increase the oil viscosity, which will slow the turbine down faster.
c. open the condenser vacuum breaker to slow the turbine down to zero speed as quickly as possible to prevent further damage.
d. throttle open the condenser vacuum breaker, to reduce turbine speed more quickly, and when vibrations are less than 10 mils to close the condenser vacuum breaker.

Examinee's Comment:

I did not select Answer "D" due to the fact that if vibrations do not drop below 10 mils, per Answer D, you would never close the vacuum breaker. LGP-2-1 page 22 says to close vacuum breaker when past critical speeds. In addition, a note also on page 22 of LGP-2-1 states do not let backpressure go greater than 5 inches.

References:

LGP-2-1 NORMAL UNIT SHUTDOWN
LOA-TG-101 UNIT 1 TURBINE GENERATOR Abnormal

LaSalle Management response:

Answer "A" is incorrect based on the requirement to throttle open the condenser vacuum breaker if the turbine exhibits excessive vibrations.

Answer "B" is incorrect based on no direction to change turbine lube oil to reduce turbine speed

Answer "C" is incorrect based on LGP-2-1 step E.3.17.1 which states to close the vacuum breaker when turbine speed is below the critical speed range.

Answer "D" is also incorrect. Although it is true that LGP-2-1 step E.3.17.1 states that if the main turbine exhibits excessive vibration, the vacuum breaker should be throttled open to reduce turbine speed, there is *no direction to close* the vacuum breaker when vibrations are less than 10 mils. The procedure directs closing the vacuum breaker when turbine speed is below the critical speed range. LOA-TG-101 step C.3 states that the turbine critical speed range is between 800 and 1400 rpm. LOA-TG-101 step B.1.20 states that the vacuum breaker should be throttled open if vibration exceeds 10 mils.

LOA-TG-101 also states to close the vacuum breaker when turbine rpm is lowered below the critical speed band. None of the procedures directed the vacuum breaker to be closed when vibrations drop below 10 mils.

Recommended Disposition:

Because there is no correct answer, recommend deleting this question from the exam.

Examination Question #77

You are the Unit Supervisor for Unit 1. The following alarms (flashing red) are indicated on the Unit 1 Fire Detection Display:

- CONTROL RM ELEV 768' FZ 1-5
- VC RET AIR MON

Select the statement below that best describes your expected actions.

a. Ensure that the reactors in both units are shutdown, dispatch the Fire Brigade, notify plant personnel in both units of the fire location, and evacuate the Main Control Room.
b. Direct Main Control Room personnel to don emergency breathing air apparatus, dispatch the Fire Brigade, and notify plant personnel in both units of the fire location.
c. Ensure that the reactors in both units are shutdown, direct Main Control Room personnel to don emergency breathing air apparatus, direct the unit assist Reactor Operators to locate and extinguish the fire.
d. Verify that the Main Control Room HVAC system has shutdown and isolated, dispatch the Fire Brigade, notify plant personnel in both units of the fire location.

Examinee's Comment:

Question 77 describes conditions indicating a fire/smoke in the main control room. In accordance with LOA-FP-101 UNIT 1 FIRE PROTECTION SYSTEM ABNORMAL, if the main control room is not habitable, you are directed to don supplied air. Actions according to LOA-FP-101 agree with answer "B". LOA-RX-101 UNIT 1 CONTROL ROOM EVACUATION ABNORMAL is required to be entered if its entry conditions are met. The entry condition "Fire, smoke, explosion or other dangerous situation requiring personnel evacuation from the Control Room." There was not enough information in the question to say whether it was safe for personnel to remain in the control room. It is reasonable to say with indication of fire and smoke in the control room evacuation may be required. If hazardous conditions exist, LOA-RX-101 would direct both units to be shut down and the control room evacuated making answer "A" also correct.

References:

LOA-RX-101 UNIT 1 FIRE PROTECTION SYSTEM ABNORMAL
LOA-FP-101 UNIT 1 FIRE PROTECTION SYSTEM ABNORMAL

LaSalle Management response:

Under the conditions listed in the question, LOA-FP-101 would always apply. If conditions were hazardous to control room personnel, at the unit supervisors descretion, LOA-RX-101 would be entered, both units scrammed and the control room evacuated. In either case, the fire brigade would be called to deal with the fire. Depending on the unit supervisors opinion of level of hazard to control room personnel, either answer "A" or "B" may be correct.

Recommended Disposition:

Recommend accepting both answers "A" and "B" based on review of LOA-RX-101 UNIT 1 CONTROL ROOM EVACUATION ABNORMAL and LOA-FP-101.

Examination Question #82

Unit 1 was operating at 100 percent power when a LOCA occurred, concurrent with a leak from the suppression pool. Following a successful reactor scram and isolation of the suppression pool leak, operators observed the following plant conditions:

- RPV Pressure is 25 psig.
- Drywell Pressure is 25 psig.
- Drywell Temperature is 250 F.
- Suppression Chamber Pressure is 25 psig.
- LPCS is injecting into the RPV @ 7500 gpm.
- RPV water level is –150" FZ and rising very slowly.
- RHR/LPCI "A" was recently shifted to Drywell Sprays.
- Suppression Pool Level is –14 ft. (Suppression pool Leak)
- Suppression Pool Temperature is 200 F and is expected to remain constant.
- NO other injection sources are currently available.

Operating RHR/LPCI "A" in the Drywell Spray mode will FIRST cause _____(1)_____ and will require the Unit Supervisor to direct______(2)______.

a. (1) LGA-001 Figure J limits to be exceeded
   (2) a realignment of RHR/LPCI "A" to inject into the RPV

b. (1) LGA-001 Figure NL limits to be exceeded
   (2) a LPCS pump flow reduction

c. (1) LGA-001 Figure NR limits to be exceeded
   (2) a continuation of current plant lineups

d. (1) LGA-003 Figured D limits to be exceeded
   (2) securing of Drywell Sprays

Examinee's Comment:

Answer C, LGA-001 "Figure NR limits to be exceeded" would be exceeded at approximately 3 psig in the suppression chamber. Distractor A, "LGA-001 Figure J limits to be exceeded" will be exceeded at approximately 18 psig (assuming RPV pressure is equalized with drywell pressure and tracks down with drywell pressure). Therefore Figure J would be exceeded first. The second part of answer C, "a continuation of current plant lineups" is incorrect: at approximately 3 psig in the suppresion chamber/drywell, the proper action would be to secure the RHR pump in drywell sprays to prevent damage due to lack of NPSH. The only justified uses for ECCS with a lack of sufficient NPSH would be for adequate core cooling or to protect the containment. With the containment at 3 psig and the RPV depressurized, the containment is no longer in jeopardy and carefull consideration should be given to the use of RHR for other than injection or suppression pool cooling. The LaSalle Shift Operations Supervisor has given guidance to not realign ECCS for use other than RPV injection until level has been returned to wide range. Based on the question, level would not be on wide range.

References:

LGA-001 RPV CONTROL
LGA-003 PRIMARY CONTAINMENT CONTROL

LaSalle Management response:

Distractor "B" states that Figure NL of EOP LGA-001 would be exceeded (LPCS NPSH curve) and that LPCS pump flow would have to be reduced. This distractor is incorrect since LPCS NPSH margin is not threatened at 200 degrees F.

Distractor "D" states that figure D (Drywell spray limit curve) will be exceeded and that Drywell sprays will have to be secured. This distractor is incorrect since decreasing Drywell pressure resulting from spray operation would not challenge the Drywell spray limit. EOP LGA-003 specifically states when to secure Drywell sprays.

Answer "C" states that Figure NR (RHR NPSH curve) would be exceeded with sprays in operation at the stated suppression chamber pressure. The RHR pump NPSH challenge would not occur until suppression chamber pressure had decreased to approximately 2 psig. The second part of answer "C" would not be prudent in this case; if suppression chamber pressure decreases to 2 PSIG, the correct action would be to secure the RHR pump (not continue operating it). This makes answer "C" an incorrect answer.

Answer "A" states that Figure 'J' limits would be exceeded and a realignment of RHR to RPV injection would be required. As the drywell is sprayed, containment pressure will be reduced which narrows the margin to this curve. At approximately a containment pressure of 18 PSIG this curve would be violated (assuming containment temperatures are not significantly reduced). This may potentially cause the loss of level instruments, which would procedurally require alignment of "A" RHR to RPV injection. Level is stated a –150 FZ (rising very slowly) and no mention of Wide Range level indication is provided. With only two injection sources available and level extremely low, prudent action would be to inject with available ECCS. Since the stem of the question asks which response would be FIRST, answer "A" would be the most correct answer to this question.

Recommended Disposition:

Recommend accepting only answer "A" as the correct answer.

Examination Question #83

A unit startup was in progress on Unit 2 in accordance with the Normal Unit Startup LGP. All conditions for entering Mode 1 had been satisfied. When repositioning the Reactor Mode switch, the Reactor Operator inadvertently rotated the Reactor Mode Switch to SHUTDOWN. The following conditions existed after the SCRAM:

- Five control rods, various positions and widely scattered throughout the core, have failed to insert beyond position 04.
- Reactor power is decreasing with a –80 second period and is currently indicating on Ranges 2 and 3 of the IRMs.
- Reactor water level is being maintained at +20 inches.
- Reactor pressure is 900 psig and decreasing slowly.

Which of the following identifies the appropriate procedure(s) to be entered?

a. LGP-3-2, Reactor Scram and LGA-NB-01, Alternate Rod Insertion ONLY.
b. LGA-001, RPV Control and LGP-3-2, Reactor Scram ONLY.
c. LGA-001, RPV Control, LGP-3-2, Reactor Scram, and LGA-NB-01, Alternate Rod Insertion
d. LGA-010, Failure to Scram (entered from LGA-001 and LGA-NB-01, Alternate Rod Insertion.

Examinee's Comment:

The body of the question stated that reactor water level is being maintained at +20 inches. Prior to the SCRAM level setpoint would have been 36", with level control in Automatic. Nothing in the question indicates whether level stayed above 20 inches or if level shrank below and has not recovered. If level remained above 20 inches, there would be no entry into LGA-001 so answer 'A' would be correct. It is also likely that with level being controlled at 20 inches, the post scram profile had been activated and a significant level shrink occurred due to the scram. The post scram profile remains activated if a reactor scram occurs and level drops below 20 inches. The function of the post scram profile is to slowly restore level to 20 inches where reactor water level control switches to single element auto at 20 inches. Based on my experience, I would expect level to shrink when the reactor scrams from this power level. Based on indications that the post scram profile has remained activated and expected plant response, I belive level would be expected to drop below 11 inches where LGA-001, RPV Control would be required to be entered. This makes answer "D" also correct.

References:

LGA-001 RPV CONTROL
LGP-3-2 REACTOR SCRAM
RWLC System lesson plan for description of the post scram profile.
LaSalle Simulator.

LaSalle Management Response:

First of all, it is plausible that answer "A" is correct based on information in the stem. The stem indicates that level is being maintained at 20 inches. The stem doesn't say whether level remained above 20" or not. It is also plausible that answer "D" is correct. Reactor water level may have fallen below 20" and now recovered. The fact that reactor water level is being maintained at 20" instead of the normal 36" implies that a level shrink occurred as a result of the scram. Expected plant response from this plant condition would be for a significant level shrink to occur. This scenario was recreated on the simulator. The reactor was scrammed from the point where the unit met the conditions for entering mode one to observe level response. When the reactor was scrammed, reactor water level shrank to about 0 inches reactor water level. LGA-001 is required to be entered at 11 inches so with 5 rods out, entry into LGA-010 would be required so answer "D" should also be considered correct. There is not enough information in the stem to differentiate between Answer "A" and "D".

Recommended Disposition:

It is recommended that both "A" and "D" answers be accepted as correct.